Amendments to the Claims:

This listing of claims will replace all prior versions, and listing, of claims in the application:

Listing of the Claims:

1-4. (Canceled)

5. (Currently Amended) A computer readable medium including computer program code for representing an object of an object-based programming environment as an object representation inside a virtual machine, wherein said object representation is suitable for use by said virtual machine, said object representation comprising a first reference, a second reference, and a hash key, and said computer readable medium comprising:

computer program code for allocating [[a]] said first reference to an internal class representation inside said virtual machine, wherein said internal class representation is a representation inside said virtual machine for a class (or class file) associated with of said object of said object-based programming environment, wherein said internal class representation describes one or more methods associated with said object and wherein said first reference can be used to invoke said one or more methods associated with said object and said class;

computer program code for allocating [[a]] said second reference to instance fields of said object which is represented by said object representation inside said virtual machine, wherein said second reference has been allocated and can be used to access one or more instance fields of said object at runtime;

computer program code for storing a hash key that can be used to identify the object, wherein said hash key is the memory address of said first reference;

wherein said second reference is a reference to an array of references that references each of said instance fields of said object, wherein each reference in said array of references is a reference to an instance field associated with of said object, and wherein each of said instance fields can be accessed by indexing said array of references; and

wherein said internal class representation includes a header of a predetermined size, and wherein a method table associated with said object is allocated immediately after said header.

6-7. (Canceled)

8. (Currently Amended) A method for representing an object of an object-based programming environment in a virtual machine <u>as an object representation that comprises a first and a second reference</u>, said method comprising:

allocating [[a]] <u>said</u> first reference in a memory portion of said virtual machine, wherein said first reference is a reference to an internal class representation of said object, wherein said internal class representation is a representation inside said virtual machine of a class (or class file) associated with said object of said object-based programming environment, <u>wherein said internal class representation includes a method table that describes one or more methods associated with said object,</u> wherein said first reference is a direct reference to said internal class representation, and wherein said first reference can be used to invoke <u>said</u> one or more methods ~~associated with said object at runtime~~;

allocating [[a]] <u>said</u> second reference in a memory portion of said virtual machine, wherein said second reference is a reference to instance fields of said object, and wherein said second reference can be used to access one or more instance fields of said object at runtime, wherein said second reference is a reference to an array of references <u>that references each of said instance fields of said object</u>, wherein each reference in said array of references is a reference to an instance field associated with said object, and wherein each of said instance fields can be accessed by indexing said array of references.

9. (Canceled)

10. (Previously Presented) A method as recited in claim 8, wherein said first reference is allocated as four bytes.

11. (Previously Presented) A method as recited in claim 8, wherein said second reference is allocated as four bytes.

12.   (Previously Presented) A method as recited in claim 8,
          wherein said internal class representation includes a header of a predetermined
size, and
          wherein a method table associated with said object is allocated immediately after
said header.

13.   (Previously Presented) A method as recited in claim 8, wherein object
representation further comprises:
          storing a hash key that represents the object.

14.   (Previously Presented) A method as recited in claim 8, wherein said hash key is
the memory address of said first reference.

15.   (Currently Amended) A method of accessing information associated with an
object of an object-based programming environment which has been represented in an
internal object representation inside a virtual machine, said method comprising:
          identifying an internal object representation for said object inside said virtual
machine, wherein said internal object representation includes a first reference and a
second reference;
          determining whether to invoke a method associated with said object should be
invoked or access an instance field associated with said object should be accessed;
          using [[a]] said first reference in said internal object representation to locate an
appropriate internal class representation inside said virtual machine when said
determining determines to invoke said method that a method should be invoked,
wherein said internal class representation is a representation inside said virtual machine
of a class (or class file) associated with said object of said object-based computing
environment, and wherein said internal class representation includes a method table
which can be used to invoke one or more methods associated with said object; and
          using [[a]] said second reference in said internal object representation to locate
one or more instance fields of said object when said determining determines to access
said that an instance field should be accessed, wherein said second reference can be
used to directly access said one or more instance fields of said object, wherein said
second reference is a reference to an array of references that references each of said
instance fields of said object, wherein each reference in said array of references is a

reference to an instance field associated with said object, and wherein each of said instance fields can be accessed by indexing said array of references.

16.   (Previously Presented) A method as recited in claim 15, wherein said method further comprises:

wherein said internal class representation includes a header of a predetermined size;

wherein a method table associated with said object is allocated immediately after said header; and

skipping said header of said internal class representation to access a method table associated with said ~~Java~~ object.

17.   (Previously Presented) A method as recited in claim 15, wherein said information regarding said object further includes a field descriptor table.

18-20. (Canceled)

21.   (Currently Amended) An [[A]] apparatus, comprising: at least one processor which can receive computer program code for a virtual machine, wherein said virtual machine is capable of:

identifying an internal object representation for an object of an object-based programming environment inside said virtual machine, wherein said internal object representation includes a first reference and a second reference;

determining whether to invoke a method associated with said object ~~should be invoked~~ or access an instance field associated with said object ~~should be accessed~~;

using [[a]] said first reference in said internal object representation to locate an appropriate internal class representation inside said virtual machine when said determining determines that a method should be invoked, wherein said internal class representation is a representation inside said virtual machine of a class (or class file) associated with said object of said object-based programming environment, and wherein said internal class representation includes a method table which can be used to locate one or more methods associated with said object; and

using [[a]] said second reference in said internal object representation to locate one or more instance fields of said object when said determining determines that an

instance field should be accessed, wherein said second reference can be used to directly access said one or more instance fields of said object, wherein said second reference is a reference to an array of references that references each of said instance fields of said object, ~~wherein each reference in said array of references is a reference to an instance field associated with said object,~~ and wherein each of said instance fields can be accessed by indexing said array of references.

22-23. (Canceled)

24. (Previously Presented) A virtual machine as recited in claim 21, wherein said internal class representation includes a header of a predetermined size, and

wherein a method table associated with said object is allocated immediately after said header.

25-27. (Canceled)